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ABSTRACT

The long term effects of a preschool intervention program for an experimental group of high-risk, black, low income children were assessed and compared to a high-risk placebo control group and low-risk "normal" controls. Seventy first grade children were involved in this 2-year follow-up study. Of these children, 42 were involved in the preschool intervention program as high-risk experimental or placebo control subjects and 28 were involved as controls. All of these children were relocated at each of three participating elementary schools in order to control for effects related to school membership. The treatment procedures utilized during the intervention program for the high risk children in the experimental group involved behaviorally specific prescriptions in three broad areas: learning problems; acting out; and shy, withdrawn behaviors. The high risk control children received equivalent placebo attention from teachers and aides, consisting of traditional nursery school activities. Approximately 4 to 5 weeks after the first grade school year had begun, teachers rated each child in the classroom on the AML scale: an 11-item, quick screening device for detecting school adaptation problems in young children. Follow-up testing was conducted by undergraduate psychology students who were trained in administering the Caldwell Preschool Inventory. Results suggested that the intervention had boosted the high-risk experimental treatment children to the point where their performance was comparable to that of children who had not experienced behavioral or learning difficulties. (Author/RH)

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Secondary Preventive Interventions With Preschool Children: A Follow-up Study[1]

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Abstract

The long term effects of a preschool intervention program for high-risk experimental children were assessed and compared to a high-risk placebo control group and low-risk "normal" controls. Seventy first grade children were involved in this two-year follow-up. The experimental treatment group was superior to that of the placebo control group at follow-up on the criteria measures of behavioral adjustment and achievement. The low-risk "normal" control group was significantly different from that of the placebo control groups, but generally not significantly different from that of the experimental treatment groups, suggesting that the intervention had boosted the high-risk experimental treatment children to the point where their performance was comparable to that of children who had not experienced behavioral or learning difficulties.

School maladaptation occurs in three out of 10 American school age children, and one in 10 of these children have problems that are serious enough to require prompt professional attention (Glidewell & Swallow, 1969). In the Detroit public school system, the age 16 dropout rate is approximately 25% with an annual referral rate of all ages to the school psychological staff of 20% (Rickel, 1977). In response to these statistics, school-based secondary prevention programs have been developed as a means to deal with children's adjustment problems in order to avert negative outcomes (e.g., school dropout, delinquency, residential treatment and substance abuse).

The Preschool Mental Health Program which was implemented seven years ago is a secondary preventive mental health effort for early screening, diagnosis and remediation of school maladaptation among preschoolers in the Detroit public schools (Rickel, 1977; Rickel & Smith, 1979; Rickel, Smith & Sharp, 1979). The Preschool Program is based on some of the characteristics of the Primary Mental Health Project (PMHP) in Rochester, New York, which has been in operation for over two decades and operates in 30 schools in the area (Cowen, Gesten & Wilson, 1979). The PMHP staff screen primary grade children for behavioral or learning problems, and nonprofessional child aides (housewives), who are professionally supervised, provide intervention to children who are having difficulty.

The Detroit Program, however, focuses on younger 3- and 4-year-old children who are all nonwhite and from lower income homes. The use of senior level undergraduate students majoring in psychology as child aides is another departure from the PMHP's approach. Further, the Preschool

Program employs a more rigorous research design than previous secondary prevention programs have attempted which utilizes random assignment of children to treatment vs. placebo control conditions and blind post-treatment assessment. Teachers are unaware of children's group assignment and of the specific nature of the experimental or control group experiences.

The effectiveness of the Preschool Mental Health Program has been evaluated at the end of each intervention year and reported in the literature (Jones, Rickel & Smith, 1980; Rickel, 1977; Rickel & Smith, 1979; Rickel, et al., 1979; Rickel, Dudley & Berman, 1980). Significant differences were consistently found at posttest in favor of the experimental treatment group of children vs. the placebo control group on all criteria instruments which measured behavioral adjustment and achievement. Despite the importance of these gains, it is necessary to continue to evaluate how well the gains are maintained. Early evaluations of Head Start, a multifaceted preschool education program which had its zeitgeist in the 1960's, indicated that at the end of the intervention year, program children exhibited significant gains on cognitive and personality measures as compared to control children who had not received the Head Start intervention. However, these gains were not maintained after the first or second year of elementary school and this "wash out" phenomenon was interpreted by researchers to indicate that a one-year Head Start Program does not produce lasting, positive changes in behavior (Zigler & Trickett, 1978).

In order to determine whether high risk experimental treated

children maintain their behavioral and cognitive gains over high-risk placebo controls, as well as to determine comparability to low-risk "normal" control children, a follow-up evaluation was deemed necessary. The purpose of the present study was to assess the Preschool Mental Health Project's intervention (Rickel, et al., 1979) over a two-year time period.

Method

Subjects:

Subjects consisted of 70 first grade children from three elementary schools. Of these children, 42 were involved in the intervention program in preschool as high-risk experimental treatment or placebo control subjects. A group of 28 subjects, initially identified as low-risk children, were also included in this study to serve as a "normal" standard of comparison for the high-risk groups. Children belonging to the various groups were relocated at each of the three elementary schools, thus preventing any effect due to school membership. All of the subjects were black and came from lower income homes. These children were enrolled in Title I Programs housed in the Region 7 Detroit Public Schools.

Instruments:

AML

The AML is an 11-item, quick screening device composed of three subscores for detecting school adaptation problems in young children. The 11 items that comprise the three subtests are: five items dealing with Moody-Internalized Behavior, five items dealing with Aggressive-Acting out Behavior, and one item dealing with Learning Disabilities. The

frequency of occurrence of each of the 11 behaviors is rated on a 5-point scale ranging from 1 = seldom or never to 5 = all of the time. Higher scores indicate more maladjustment. The test-retest reliability of the AML is .85 (Cowen, Dorr, Clarfield, Kreling, McWilliams, Pokracki, Pratt, Terrell, & Wilson, 1973).

Caldwell Preschool Inventory

The Caldwell Preschool Inventory, Revised Edition, is a 64-item brief achievement assessment procedure designed for individual oral administration to young children in the three-to-six age range and is composed of four subtests which measure the following attributes: Personal-Social Responsiveness, Associative Vocabulary, Concept Activation-Numerical and Concept Activation-Sensory (Caldwell, 1970). The test-retest reliability of the Caldwell is .88. The standardization sample is based on the responses of 1,531 children in more than 150 Head Start classes in the Fall, 1969, in all regions of the United States. Of the normative group, 68% were black pre-school age children (Caldwell, 1970).

Procedure

All of the first grade teachers received instructions on the identification of maladjustment and the use of the AML scale. The experimenters read through the questions with each teacher and discussed the implications of the various possible ratings. Approximately four to five weeks after the beginning of the school semester, teachers were asked to rate each child in the classroom on the AML scale. At follow-up, teachers rated all children in their classroom regardless of whether they participated in the experimental vs. control condition of the pre-post intervention study in order

to keep the teachers blind regarding initially identified high risk children.

Undergraduate aides who were not aware of the children's status (i.e., experimental vs. control) assisted in the follow-up administration of the Caldwell Preschool Inventory. The aides were seniors at Wayne State University majoring in psychology and received academic credit for their participation. Aides were selected on the basis of having a warm, committed attitude and superior academic record. Caldwell's (1970) scoring instructions, included in the manual, were utilized in training the aides in the administration of the Inventory. The experimenters reviewed each test item and the criteria for a correct response with the aides. The aides were also given suggestions on how to gain rapport with a child and what to do if a child should become uncooperative.

To ensure interrater reliability, ten children were selected at random and given the Caldwell Preschool Inventory by the aides. The mean interrater reliability was .92 (N = 10); the range across subscales was 86.7 - 100.00.

In the subsequent experimental testing, each child was tested individually by a trained aide in a separate room. Testing time was approximately 25 minutes per child.

The treatment procedures utilized during the intervention year for the high risk children in the experimental group involved behaviorally specific prescriptions that were divided into three broad areas: learning problems; acting out; and shy, withdrawn behaviors. An example of a prescription that was given to the teaching staff in the case of a shy,

anxious child was for this child to experience on a one-to-one basis a warm, permissive, committed human relationship. Typical activities that were encouraged included working with expressive media, exploring the school environment and story telling.[3] The high risk control children received placebo attention from teachers and aides, consisting of traditional nursery school activities, i.e., playing with blocks; cutting, pasting, coloring; and singing songs. All children received the same number of prescriptions or activities; content was the only difference.

Results

Comparison of the Low-Risk Control vs. High-Risk Groups

The data analysis was conducted in two basic parts. The first portion of the analysis involved a MANOVA on Caldwell and AML total scores with subsequent univariate tests, comparing the low-risk "normal" control group to each of the four high-risk groups. The data revealed significant differences in performance between the low-risk control subjects and the high-risk placebo control groups. The (low-risk control vs. high-risk shy control) comparison was significant $F(1,65) = 14.983$, $p < .001$ over the three testing periods on the multivariate test, with a higher performance for the low-risk controls (see Figures 1 and 2). Univariate tests on Caldwell and AML total scores were significant $F(1,65) = 26.840$, $p < .001$ and $F(1,65) = 4.625$, $p < .05$ respectively. The multivariate test of the difference between these two groups also changed significantly over time $F(1,65) = 4.809$, $p < .002$. Examining the cell means in Figures 1 and 2, the discrepancy between these two groups increased significantly at post-testing and decreased significantly at follow-up.

Insert Figures 1 and 2 about here

The multivariate contrast (low-risk controls vs. high-risk aggressive controls) was found to be significant $F(1,65) = 22.554$, $p < .001$ over the three testing periods with, again, a significantly higher performance for the low-risk normal controls. Univariate tests on Caldwell and AML total scores were also significant $F(1,65) = 32.686$, $p < .001$ and $F(1,65) = 15,229$, $p < .001$ respectively. The comparison of these two groups over time was likewise significant $F(1,65) = 6.149$, $p < .001$ on the multivariate test. Univariate tests and cell means showed (see Figures 1 and 2) that the post-test difference between these two groups was largely maintained at follow-up, particularly on the AML.

The contrasts between the low-risk normal control subjects and the high-risk treatment groups generally showed non-significant differences. Both the overall difference across time and the change in this difference with time between the low-risk control vs. high-risk aggressive treatment groups were found non-significant $F>1$.

The multivariate between group contrast of the (low-risk vs. high-risk shy treatment) groups was significant over the three testing occasions $F(1,65) = 6.623$, $p < .002$, however, the univariate tests indicated significance only on the Caldwell total score $F(1,65) = 12.499$, $p < .001$. The means revealed a superior performance for the low-risk control group on this test. The multivariate test of the interaction of this contrast with time was non-significant $F>1$.

The results of this portion of the analysis support rather strongly the hypothesis that the performance of the high-risk shy and aggressive treatment groups would more closely approximate the low-risk controls than that of the high-risk control groups at follow-up.

Comparison of the High-Risk Groups

The second portion of the analysis essentially replicated Rickel et al. (1979) post-test analysis on the performance of the high-risk treatment and placebo control groups, however, this time over three testing occasions: pre-, post-, and follow-up. The effectiveness of the treatment, differences between problem types, effect of time, and the interaction of these factors with respect to the criteria instruments was assessed by means of a least squares Multivariate Analysis of Variance (MANOVA) on total scores. Subsequent univariate tests (ANOVA'S) were performed. The multivariate test of the difference between problem types (aggressive vs. shy) on the Caldwell and AML total scores over the three testing periods was found to be significant $F(2,64) = 6.883$, $p < .002$. Univariate tests revealed significance only on the Caldwell total score $F(1,65) = 10.463$, $p < .002$. Examination of the means (see Table 1) indicates that the performance of the aggressive and shy treatment groups was superior to that of the aggressive and shy placebo control groups over the three administrations of the Caldwell test.

The interaction of treatment and the change over time factor was significant $F(4,62) = 2.775$, $p < .035$ on the multivariate test. Univariate tests indicated that the difference between the treatment and placebo control groups significantly increased on the Caldwell at post-testing $F(1,65) = 8.378$, $p < .005$. A significant treatment x problem type x time interaction on the Caldwell indicated that the treatment was more effective at post test with the shy withdrawn experimental group $F(1.65 = 5.127$, $p < .05$. Observation of the means in Table 1 indicates that the performance of the treatment groups on the Caldwell and AML surpasses that of the placebo control groups at follow-up.

Insert Table 1 about here

Finally, the multivariate test of the change over time factor was significant $F(1,65) = 226.370$, $p < .001$. All of the univariate tests were also significant, except the AML at post-testing. The means otherwise show a significant improvement in all groups over time which reflect expected maturational effects.

Discussion

The results of this study clearly favor the Preschool Mental Health Project's intervention program. The second portion of the analysis showed that all high-risk groups generally improved in school adjustment and achievement over time. A significant effect of problem type was evident on the Caldwell test, with a superior performance for the aggressive and shy treatment children over the two high risk control groups. It should be noted that the 64-item Caldwell is a relatively stronger assessment tool than the 11-item AML which is consistent with the pattern of results. Further, the shy treatment children appeared to benefit more from the intervention than the aggressive treatment children and these gains seemed to be maintained at follow-up. At posttest these differential gains were not observed since the benefits of the experimental treatment program were not specific to either shy, withdrawn or aggressive, acting-out behaviors, but were equally effective with both of the identified problem types in these children (Rickel, et al., 1979). Cowen et al. (1979) have reported that the PMHP has also been more effective with shy-anxious children than with children who are aggressive, acting-out or who have learning difficulties. Garmezy (1974) has reported similar results in his review of work with high risk children. These findings have prompted the Preschool Mental

Health Program staff to develop supplemental prescriptive activities in order that future intervention efforts will more effectively deal with children who are identified as aggressive, acting-out or who have learning difficulties. Nonetheless at two year follow-up, the performance of the treatment groups on both criteria measures (Caldwell and AML) exceeded that of the placebo control groups.

It may be argued that the effect of maturation is as strong as the treatment effect since all high-risk groups improved to some degree over time. Data obtained from the first portion of the analysis comparing the low-risk control subjects to the four high-risk groups was most encouraging regarding the effects of maturation vs. strength of intervention. The figures showed that the performance of the low-risk control subjects was significantly different from that of the placebo control groups, but generally not significantly different from that of the experimental treatment groups. This suggested that in terms of both cognitive and social-emotional development, the shy and aggressive treatment children were better able to compete with their adjusted peers, and were now less likely to be retained in a grade, or to require placement in special education classes. The intervention has apparently moved these children in the direction of comparability in performance to that of children who have not experienced behavioral or learning difficulties.

Footnotes

[1] The study was supported by grants from the McGregor Fund and the Eloise and Richard Webber Foundation, and by the Detroit Public Schools, for which the authors express grateful appreciation.

[2] Address all correspondence to Dr. Annette U. Rickel, Department of Psychology, Wayne State University, Detroit, Michigan 48202.

[3] A training manual detailing the remediation is available on request from the senior author.

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Table 1

Mean and Standard Deviation of Caldwell and AML Total Pre, Post and Follow-up Scores by Group and Risk

Group		Caldwell			AML		
		Pre	Post	Follow-up	Pre	Post	Follow-up
High Risk Shy Control (n = 12)	M	21.87	38.00	49.13	29.29	35.57	25.71
	SD	9.22	5.98	6.30	4.79	7.85	3.25
High Risk Aggressive Control (n = 9)	M	15.83	39.67	48.33	27.00	32.33	27.33
	SD	8.50	3.62	2.42	11.80	7.63	6.31
Low Risk "Normal" Control (n = 28)	M	35.14	53.50	57.64	22.93	18.36	17.71
	SD	7.30	11.84	4.28	9.94	7.30	5.72
High Risk Shy Experimental (n = 11)	M	14.50	46.43	53.50	25.21	23.07	21.57
	SD	10.59	7.49	5.53	13.01	9.11	9.55
High Risk Aggressive Experimental (n = 10)	M	25.14	50.00	55.71	26.53	25.67	22.40
	SD	8.13	6.53	4.86	8.29	5.62	5.37

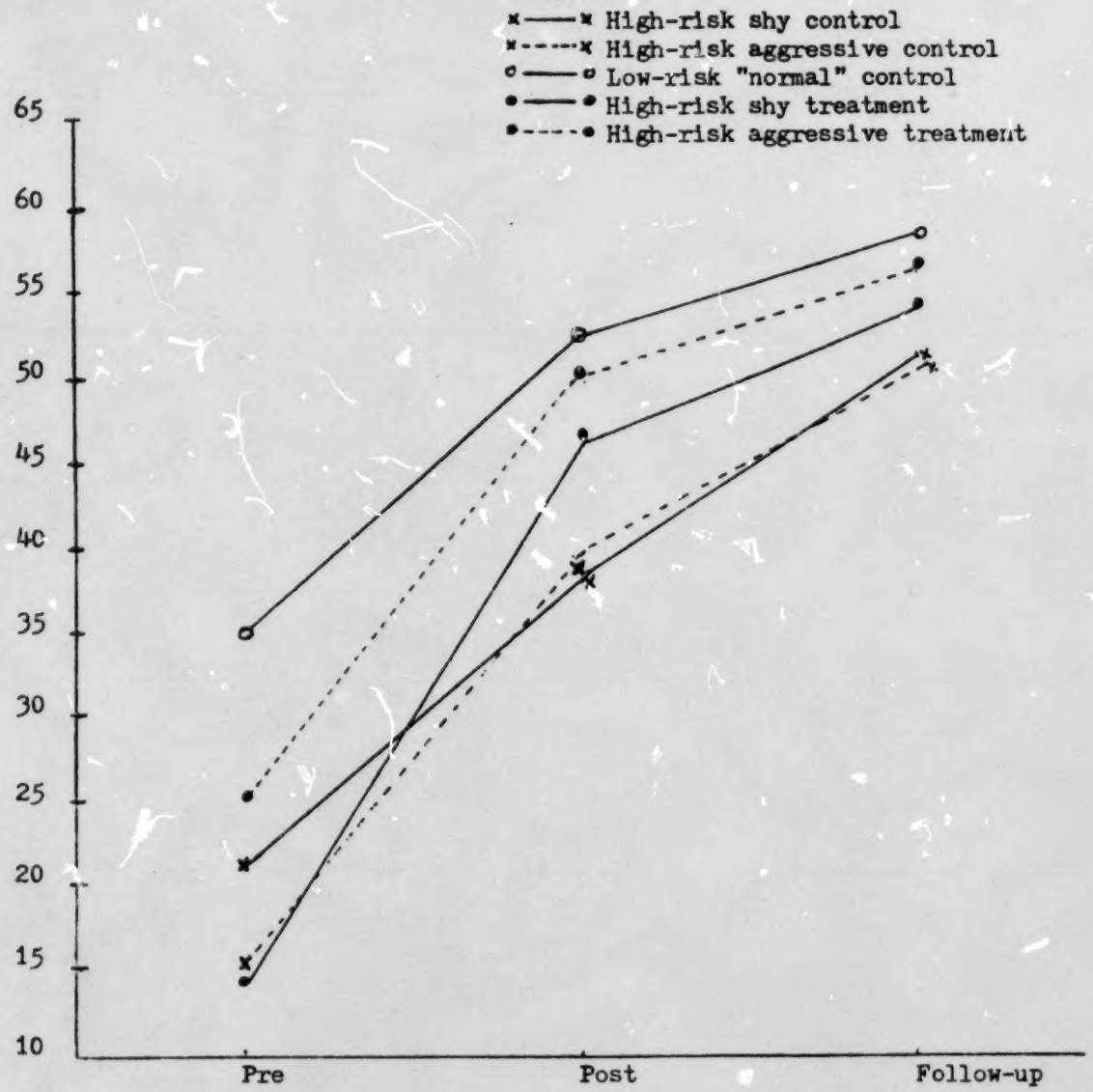

Figure 1. Group Means for Total Scores of the Caldwell Preschool Inventory

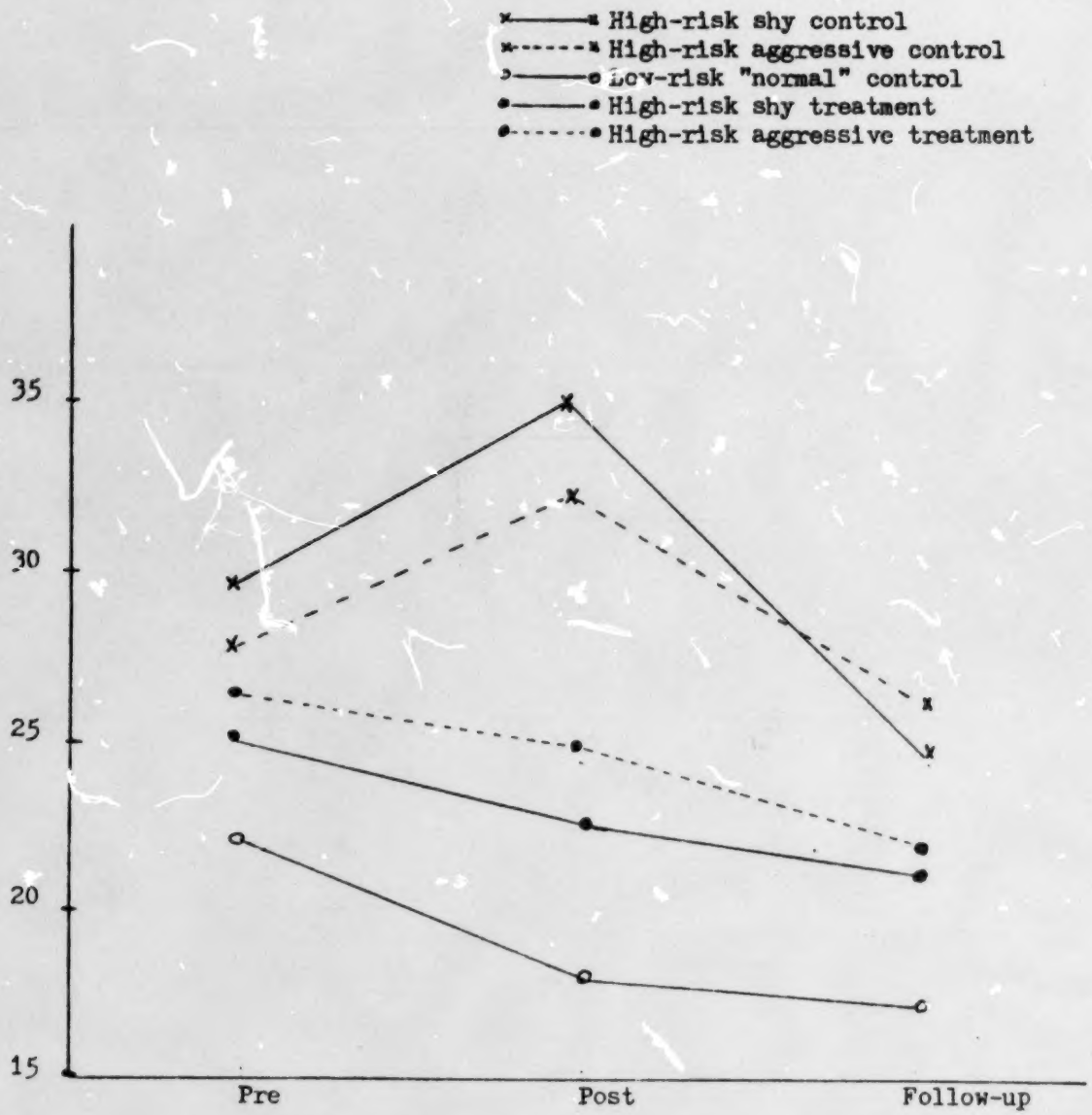

Figure 2. Group Means for Total Scores of the AML